UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,352	03/01/2004	Shashidhar Sathyanarayana	701470.4074	2406

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EXAMINER
RAMIREZ, JOHN FERNANDO

ART UNIT	PAPER NUMBER
3737	

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/791,352	SATHYANARAYANA, SHASHIDHAR
	Examiner	Art Unit	
	John F. Ramirez	3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>01 March 2004</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-31</u> is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-31</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>03/01/04</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

         1.☐ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____.

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
     Paper No(s)/Mail Date <u>6/15/04-6/27/05</u>.

4) ☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

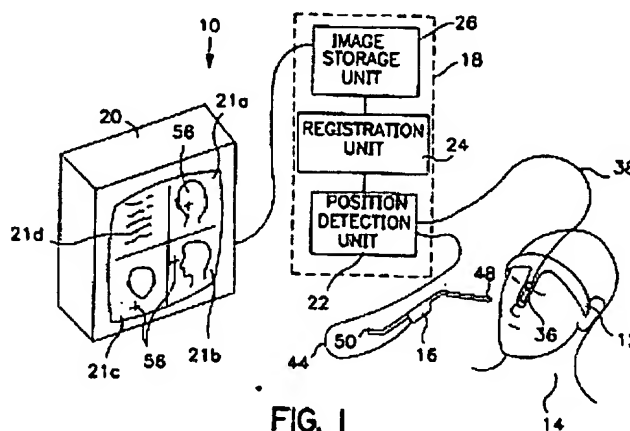form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Ferre et

al. (US 5,967,980).

FIG. I

With respect to claims 1-13, Ferre et al., teaches all the structures as set forth

above in figures 1, 7, 8, 9. A method of tracking the position of an imaging head of a

catheter in three-dimensional space within a human body, the method comprising the

steps of: 1) receiving a first image captured by the catheter; 2) receiving a second

image captured by the catheter; 3) comparing the first and second images to determine

first correlation loss data between the first and second images; 4) determining first

position data for the second image, relative to the first image, using the first correlation

loss data; and 5) outputting the first position data, 6) wherein determining first position

data for the second image comprises determining a first angle of separation between

the first and second images using the first correlation loss data, and 7) determining first

position data for the second image, relative to the first image, using the first angle of

separation, 8) comparing the first and second images to determine second correlation

loss data between the first and second images, 9) determining second position data for

the second image, relative to the first image, using the second angle of separation and

10) outputting the second position data, 11) wherein determining second position data

for the second image comprises determining a second angle of separation between the

first and second images using the second correlation loss data, 12) determining second

position data for the second image, relative to the first image, using the second angle of

separation, 13) wherein the first and second correlation loss data measure correlation

loss in different directions, 14) wherein the first image comprises a first plane and the

second image comprises a second plane, 15) wherein the first position data comprises

a first line in three dimensions in the second plane and the second position data

comprises a second line in three dimensions in the second plane, 16) wherein the first

position data and the second position data define a position of the second plane in three

dimensions, 17) wherein the first image comprises a first plane and the second image

comprises a second plane, 18) wherein the first position data comprises a first line in

three dimensions in the second plane, 19) wherein the first image comprises a first data

location and the second image comprises a second data location corresponding to the

first data location, 20) wherein determining first correlation loss data comprises

determining a difference in an image property between first image data stored in the first

data location and second image data stored in the second data location, 21) wherein

the image property comprises one or more of density, color, hue, saturation, or

reflectivity, 22) wherein determining first correlation loss data further comprises

repeating the determination for a plurality of data locations situated along a line in the

first image and a corresponding line in the second image, and 23) wherein the

corresponding line in the second image is a projection onto the second image of the line

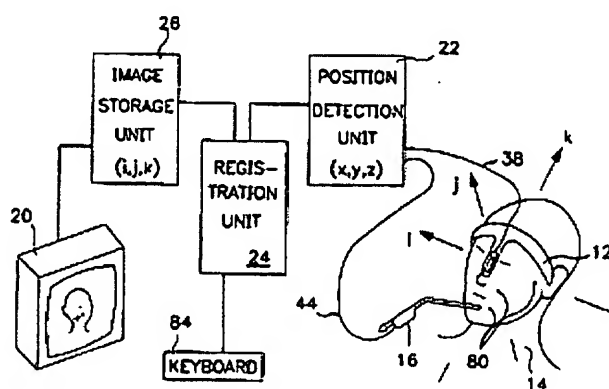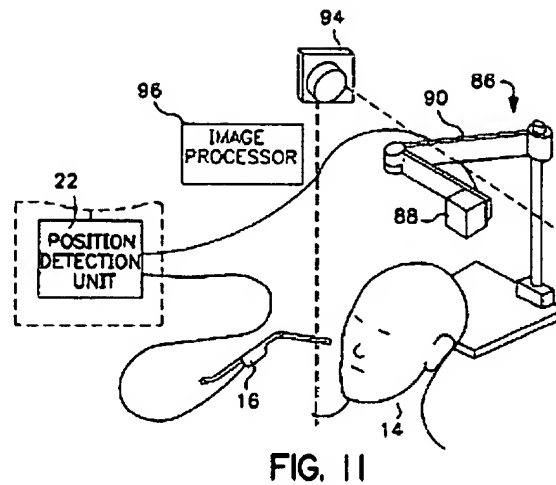in the first image would be inherently met by the system disclosed by Ferre et al.

FIG. 9

FIG. II

With respect to claims 14-26, Ferre et al., shows in Figures 1-12 a computer-useable medium, the medium comprising a sequence of instructions which, when executed by a processor, causes the processor to execute a method of tracking the position of an imaging head of a catheter within a human body, the method comprising: receiving a first image captured by the catheter, receiving a second image captured by the catheter; comparing the first and second images to determine first correlation loss data between the first and second images, determining first position data for the second image, relative to the first image, using the first correlation loss data; and outputting the first position data, wherein determining first position data for the second image comprises determining a first angle of separation between the first and second images using the first correlation loss data, and determining first position data for the second image, relative to the first image, using the first angle of separation, wherein the method further comprises: comparing the first and second images to determine second correlation loss data between the first and second images, determining second position data for the second image, relative to the first image, using the second angle of

separation; and outputting the second position data, wherein determining second position data for the second image comprises determining a second angle of separation between the first and second images using the second correlation loss data, and determining second position data for the second image, relative to the first image, using the second angle of separation, wherein the first and second correlation loss data measure correlation loss in different directions, wherein the first image comprises a first plane and the second image comprises a second plane, wherein the first position data comprises a first line in three dimensions in the second plane and the second position data comprises a second line in three dimensions in the second plane, and wherein the first position data and the second position data define a position of the second plane in three dimensions, wherein the first image comprises a first plane and the second image comprises a second plane, wherein the first position data comprises a first line in three dimensions in the second plane, and wherein the first image comprises a first data location and the second image comprises a second data location corresponding to the first data location, and wherein determining first correlation loss data comprises determining a difference in an image property between first image data stored in the first data location and second image data stored in the second data location, wherein the image property comprises one or more of density, color, hue, saturation, or reflectivity, wherein determining first correlation loss data further comprises repeating the determination for a plurality of data locations situated along a line in the first image and a corresponding line in the second image, wherein the corresponding line in the second image is a projection onto the second image of the line in the first image.
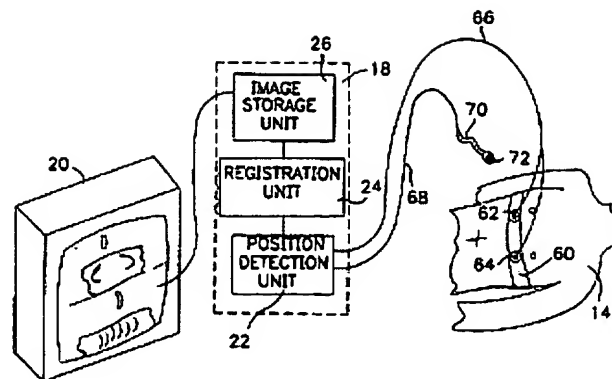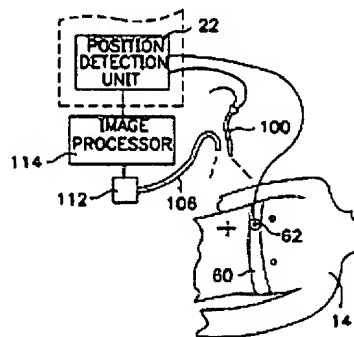
FIG. 7

FIG. 12

With respect to claims 27-31, Ferre et al. shows in figures 1-12, a system for

mapping a lumen in a patient, comprising: an imaging catheter adapted to capture a

plurality of images of the lumen; a computer adapted to receive the captured plurality of

images and create a map of the lumen by determining a position in three dimensions of

each of the plurality of images using data contained in the images', and an output

device adapted to output the map of the lumen, wherein the output device comprises a

video display, wherein the computer determines the position of one of the plurality of

images by comparing the image with a reference image whose position is known,

wherein the system is initialized by arbitrarily defining the position of the reference

image, and wherein the position of the reference image is known based on a prior

determination of the position by the computer.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to John F. Ramirez whose telephone number is (571) 272-

8685. The examiner can normally be reached on (Mon-Fri) 7:30 - 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Brian L. Casler can be reached on (571) 272-4956. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

JFR
01/9/06

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